

SALMON RIVER HABITAT O&M/MONITORING & EVALUATION

9405000

SHORT DESCRIPTION:

Maintain habitat improvements and evaluate benefits, coordinate evaluation of land and water stewardship activities, coordinate the planning, implementation, monitoring, and evaluation of new improvements and protections.

SPONSOR/CONTRACTOR: SBT

Shoshone-Bannock Tribes

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SUB-CONTRACTORS:

Salmon Corps

GOALS

GENERAL:

Supports a healthy Columbia basin, Maintains biological diversity, Maintains genetic integrity, Increases run sizes or populations, Provides needed habitat protection

ANADROMOUS FISH:

O&M

NPPC PROGRAM MEASURE:

7.6A.1; 7.6A.2; 7.6B.1; 7.6B.3; 7.6B.4; 7.6B.5

TARGET STOCK

East Fork Salmon River Summer Steelhead

Yankee Fork Salmon River Spring Chinook

East Fork Salmon River Spring Chinook

Bear Valley Cr. Spring Chinook

LIFE STAGE

All

Fry, Parr

All

All

MGMT CODE (see below)

N S (P)

N S (L) W

N (L) W

N (L) W

AFFECTED STOCK

Sculpin, spp.

Mountain Whitefish

Brook Trout

Westslope Cutthroat Trout

Bull Trout

BENEFIT OR DETRIMENT

Beneficial

Beneficial

Beneficial

Beneficial

Beneficial

BACKGROUND

STREAM AREA AFFECTED

Stream name:

Bear Valley Cr., East Fork Salmon River, Big Boulder Cr., Herd Cr., Yankee Fork Salmon River, Lemhi River, Pahsimeroi River, Panther Creek, Upper Salmon River

Stream miles affected:

Drainage area > 7,500 sq. miles

Hydro project mitigated:

N/A. This project does not mitigate a specific hydroelectric project.

LAND AREA INFORMATION

Subbasin:

Salmon River basin

Land ownership:

Both

Acres affected:

4.8 million

Habitat types:

HISTORY:

Historic hunting and fishing areas of the Shoshone-Bannock Tribes included central and southern Idaho. Rights to continue traditional activities were reserved by the Tribes by the Fort Bridger Treaty of 1868. The downward trends in returns of anadromous fish are a concern of the Tribes. For many years the Tribes have been working to improve anadromous fish runs back to the traditional fishing areas. These efforts of this project have taken various forms, including: sponsorship of habitat enhancement projects; planning the development of low-tech, bioenhancement facilities; coordination and oversight of human activities in the Salmon River drainage, especially activities on state and federal land; cooperation and information sharing with other fisheries and land management agencies, groups, and other tribes on fisheries-related issues.

The Tribes continue to monitor and evaluate the three systems (Bear Valley Creek, Yankee Fork, and East Fork) in which major habitat improvement projects have been performed. Continued monitoring is needed to determine benefits of habitat improvement to fishes and if further modification or improvements are needed to obtain objectives. In addition, natural production monitoring has been performed on the North Fork Salmon River, Panther Creek, and Middle Fork Salmon River in cooperation with the Idaho Department of Fish and Game. For evaluating fish benefits we are concerned with increasing rearing capacity of juvenile fish and improving habitat for spawning. Benefits are eventually judged by increasing adult returns. Monitoring and evaluation has also concentrated on increases in numbers of resident salmonids, improvement of habitat features known to be important to salmonids, and general improvement in the impacted stream ecosystems. Monitoring and evaluation provides data for continued fish improvements through adaptive management and will be important for Lemhi Model Watershed activities.

BIOLOGICAL RESULTS ACHIEVED:

1. Reduction of sediment input into Bear Valley Creek which has resulted in more preferred habitat for resident salmonids and juvenile chinook salmon and has also improved spawning habitat.
2. Development of additional rearing habitat in off-channel ponds in the lower Yankee Fork which has resulted in much use by juvenile anadromous salmonids and provides habitat for supplementation.
3. Removal of a dam blocking migration of anadromous salmonid to high quality habitat in Big Boulder Creek. Attempts to restore fish runs to this creek have been implemented by stocking adult steelhead; at least one wild/natural fish returned in 1996.
4. Reduction of sediment input into Big Boulder Creek which has resulted in more preferred habitat for resident salmonids and juvenile steelhead and has also improved spawning habitat.
5. Bank stabilization on Herd Creek through the use of fencing and riparian plantings.

PROJECT REPORTS AND PAPERS:

1984-1995 Annual Reports are available. The 1996 Annual Report is in preparation.

ADAPTIVE MANAGEMENT IMPLICATIONS:

The fencing effort on Herd Creek is experimental. As more knowledge is gained, the study will be adapted to better exclude livestock and improve stream and riparian conditions.

The Big Boulder Creek enhancement area is still in the process of stabilizing and must be adaptively managed due to annual fluctuations in run-off. During the construction phase, the project was adaptively managed on the ground with the contractors to achieve the objectives of the project. Several different revegetation techniques are planned for this coming field season, and the knowledge gained from their successes or failures will be utilized in the planning of future projects.

Improvement of habitat has been performed in drainages where much potential benefit (i.e., increased quality of rearing and/or spawning habitat = more adult returns) was determined through assessments prior to implementation of improvement. Therefore, habitat improvement would increase the number of adults returning and aid in the restoration of chinook salmon populations to fishable levels and provide more steelhead for harvest. Monitoring of chinook salmon populations is necessary to inform managers about the status of specific populations. This information is critical for determining management options for the preservation, protection, and recovery of chinook salmon populations.

PURPOSE AND METHODS

SPECIFIC MEASUREABLE OBJECTIVES:

Objective: Enhancement of degraded habitat to increase production and naturally-producing wild anadromous salmonids and resident salmonids.

CRITICAL UNCERTAINTIES:

For this project to assess benefits to chinook salmon and steelhead populations in the project areas, populations must increase in size. The objective of this project (increase production of wild anadromous salmonids) cannot be achieved unless improvements in out-of-basin survival occur.

BIOLOGICAL NEED:

Chinook salmon are currently listed as an endangered species under the Federal Endangered Species Act and steelhead are proposed for listing throughout the Salmon River drainage. We do not propose that habitat improvement alone will recover declining stocks of these fish. More fish are expected to return to the Salmon River basin with improvements in the downstream migration corridor. Habitat improvement will provide better or additional spawning habitat for those returning adults, and will provide improved or additional incubation and rearing habitat that will increase natural production levels. These habitat improvements also benefit native resident salmonids.

HYPOTHESIS TO BE TESTED:

1. Adult chinook salmon and steelhead returns are greater after habitat improvement than before. More realistically, considering the high rate of passage mortality at hydroelectric projects, this hypothesis should be stated as: Adult returns are declining at a slower rate after habitat improvement than before.
2. Where habitat was made available to previously blocked passage the hypothesis is: Adults are returning to habitat made available.
3. Habitat is of better quality for the production of chinook salmon and steelhead after habitat improvement than before. This hypothesis is measured by higher survival of life-stages associated with freshwater rearing.

ALTERNATIVE APPROACHES:

Alternative approaches were considered in feasibility studies that were conducted prior to all enhancement projects and were reviewed by interagency task force teams prior to implementation. See EA (1988) for East Fork Salmon river, BNI (1987) for Yankee Fork Salmon River, and J. M. Montgomery (1985) for Bear Valley Creek. Citations can be found in the 1995 Annual Report.

JUSTIFICATION FOR PLANNING:

N/A. Although not the project focus, this project improves the planning, coordination, and implementation of watershed management projects in the basin with the Lemhi Model Watershed and other activities.

METHODS:

1. Redd counts to determine adult escapement.
2. Snorkeling to determine juvenile production.
3. Measure habitat parameters to determine changes in habitat quality and quantity.

PLANNED ACTIVITIES

SCHEDULE:

<u>Planning Phase</u>	<u>Start</u> 1984	<u>End</u> Ongoing	<u>Subcontractor</u>
<u>Task</u> Continue to monitor human activities in the Salmon River which have the potential to affect anadromous fish and their habitat.			
<u>Planning Phase</u>	<u>Start</u> 1984	<u>End</u> Ongoing	<u>Subcontractor</u>
<u>Task</u> Continue to participate in regional committees and work groups which share information on habitat enhancement and supplementation in the Middle Fork / Upper Salmon River basins.			
<u>Planning Phase</u>	<u>Start</u> 1995	<u>End</u> 1998	<u>Subcontractor</u>
<u>Task</u> Continue to coordinate with other agencies/groups to develop a habitat enhancement plan for the East Fork Salmon River.			

<u>Implementation Phase</u>	<u>Start</u> 1992	<u>End</u> Ongoing	<u>Subcontractor</u>
<u>Task</u> Stock steelhead adults into Big Boulder Creek.			
<u>Implementation Phase</u>	<u>Start</u> 1984	<u>End</u> Ongoing	<u>Subcontractor</u>
<u>Task</u> Monitor juvenile anadromous salmonid abundance in the Middle Fork Salmon River and other upper Salmon River streams.			
<u>Implementation Phase</u>	<u>Start</u> 1984	<u>End</u> Ongoing	<u>Subcontractor</u>
<u>Task</u> Monitor juvenile and adult anadromous salmonid abundance in the three project areas.			
<u>O&M Phase</u>	<u>Start</u> 1984	<u>End</u> Ongoing	<u>Subcontractor</u>
<u>Task</u> Maintain structures associated with the project enhancement areas (i.e., headgates, riparian plantings, fences).			
<u>O&M Phase</u>	<u>Start</u> 1984	<u>End</u> Ongoing	<u>Subcontractor</u>
<u>Task</u> Monitor habitat features associated with enhancement projects.			
<u>O&M Phase</u>	<u>Start</u> 1987	<u>End</u> 2000	<u>Subcontractor</u>
<u>Task</u> Evaluate alternatives to improve flows in Yankee Fork off-channel rearing ponds.			
<u>O&M Phase</u>	<u>Start</u> 1992	<u>End</u> Ongoing	<u>Subcontractor</u> Salmon Corps
<u>Task</u> Continue to establish cattle exclosures and riparian vegetation in Herd Creek.			
<u>O&M Phase</u>	<u>Start</u> 1991	<u>End</u> 2000	<u>Subcontractor</u> Salmon Corps
<u>Task</u> Complete the stabilization of the flood plain and stream channel in the Big Boulder Creek habitat enhancement area.			

PROJECT COMPLETION DATE:

Ongoing O & M / M & E project with no specific completion date.

CONSTRAINTS OR FACTORS THAT MAY CAUSE SCHEDULE OR BUDGET CHANGES:

Many of the target changes are dependent upon uncontrollable factors such as snow pack and run-off, both of which substantially affect stream characteristics. An extreme run-off event could alter the scheduling and budget for this project. Continued stock-to-recruitment levels from mainstem Snake River and Columbia River dams will lead to extinction soon, forcing increased money and manpower to be spent on expediting reintroduction efforts.

OUTCOMES, MONITORING AND EVALUATION

SUMMARY OF EXPECTED OUTCOMES

Expected performance of target population or quality change in land area affected:

1. Habitat becomes more favorable for the production of anadromous salmonids and resident fish.
2. Survival to life stages associated with freshwater rearing of anadromous salmonids should increase to higher levels than before habitat improvement.

Present utilization and conservation potential of target population or area:

Present utilization of available habitat is at the lowest level recorded due to low numbers of returning adults. Potential use of habitat is high given improvements in out-of-basin survival.

Assumed historic status of utilization and conservation potential:

Historical utilization of available habitat was extremely high, prior to the influence of man. Historic redd count data indicates extensive use of available habitat in the late 1950's (over 2,000 redds in the upper Salmon River (includes East Fork and Yankee Fork Salmon River), and over 2,200 in the Middle Fork Salmon River (includes Bear Valley Creek)).

Long term expected utilization and conservation potential for target population or habitat:

Long term expected/desired utilization depends on improvements in out-of-basin survival. The long term desired utilization would be self-sustaining naturally produced chinook salmon and steelhead capable of supporting fisheries.

Contribution toward long-term goal:

By reducing sediment inputs and improving spawning, incubation, and rearing habitats, the project will allow for better or more habitat for anadromous salmonids, whether naturally returning, enhanced, or reintroduced with artificial production.

Indirect biological or environmental changes:

Improved habitat for anadromous salmonids also benefits resident salmonid populations. Improvements in riparian areas benefit numerous wildlife species. Ponds also benefit wildlife, reptiles, and amphibians.

Physical products:

1. Bear Valley Creek: reclamation of 2.5 km of floodplain eliminated a substantial source of fine sediment into the remaining 50 km of stream and the Middle Fork Salmon River. Improvements in surface substrate, pool cover, and non-anadromous fish densities have been documented.
2. Yankee Fork Salmon River: 1.5 ha of additional rearing habitat were made available by connecting off-channel pond systems to the Yankee Fork. Use of the off-channel ponds by juvenile anadromous salmonids is greater than the adjacent mainstem Yankee Fork.
3. Big Boulder Creek: removal of a small hydroelectric dam and modification of a debris jam in the lower sections of the stream made available 3.2 km and 7.7 km of previously unavailable spawning and rearing habitat, respectively, for anadromous salmonids.
4. Big Boulder Creek: stabilization of 0.5 km of stream channel in the upper reaches removed a source of fine sediment to the system and should improve channel morphology.
5. Herd Creek: fencing and riparian planting along intervals of private land, in conjunction with grazing modifications, should improve streambank stability and reduce sediment inputs.

Environmental attributes affected by the project:

Bear Valley Creek, Herd Creek, Big Boulder Creek: sources of fine sediment have been removed from the system.
Big Boulder Creek: previously blocked spawning and rearing habitat have been made available.
Yankee Fork Salmon River: off-channel rearing areas have been made available for use by anadromous salmonids.

Changes assumed or expected for affected environmental attributes:

Bear Valley Creek, Herd Creek, Big Boulder Creek: increased productivity of anadromous salmonids due to improvements in spawning, incubation, rearing, and riparian habitats. Big Boulder Creek: increased productivity of steelhead due to increased quantity of available spawning and rearing habitat. Yankee Fork Salmon River: increased productivity of anadromous salmonids due to increased use of rearing habitat.

Measure of attribute changes:

Bear Valley Creek: the dredge-mined area of the enhancement site has been virtually eliminated as an extraordinary source of sediment. Improvements in surface substrate and pool cover have been documented. Big Boulder Creek and Herd Creek: stream channel and riparian enhancements to limit sedimentation have not been in place long enough to stabilize and revegetate, but successful documentation of sediment reduction is expected.

Assessment of effects on project outcomes of critical uncertainty:

If anadromous salmonid runs continue to decline due to out-of-basin factors, project outcomes will be assessed with resident salmonid population changes and anadromous fish reintroduction efforts.

Information products:

Fish population data, redd count data, and habitat measurement data are available to interested agencies/parties in the region.

Coordination outcomes:

Improved communication and information sharing among entities working in the Salmon River on fisheries related issues. Monitoring of human activities in the Salmon River which have the potential to affect anadromous fish and their habitat and coordinating the planning, implementation, and monitoring of problem-solving in the region. Assisting other entities in

monitoring overall populations of anadromous fish in the Salmon River.

MONITORING APPROACH

As a continuing Operations and Maintenance / Monitoring and Evaluation project, the region should monitor project outcomes on an annual basis as to their benefits to the watershed. Reducing sedimentation and enhancing fish habitat are not just reach-specific benefits.

Provisions to monitor population status or habitat quality:

Current and future statements of work include tasks to monitor the population status for the target stocks and the habitat measurements necessary to document improvement.

Data analysis and evaluation:

Population estimates, salmonid production estimates, habitat measurements, and other variables will be statistically compared to previous years data to evaluate trends and significant changes over time.

Information feed back to management decisions:

Management decisions related to this project are made by all involved agencies in the project area, and information is available through the timely reporting of work through Annual Reports as well as data sharing with other agencies throughout the course of the year.

Critical uncertainties affecting project's outcomes:

The critical uncertainties related to this project involve out-of-basin survival issues at eight hydropower facilities along the migration corridor. Implementation of programs to improve out-of-basin survival such as immediate removal of the earthen-fill sections of the four lower Snake River dams and the restoration of the river to its natural condition are necessary to eliminate the critical uncertainties affecting this project. The decision concerning the natural river condition is supposed to be made in 1999, and it is currently 1999 in the U.S. Army Corps of Engineers' budget process, and needs initiated immediately.

EVALUATION

The evaluation of this project's overall performance should be based on improved returns of adult anadromous salmonids to the habitat enhancement areas. Even with increased habitat quantity and quality, anadromous fish runs continue to decline due to out-of-basin survival issues. Additionally, the project should be evaluated based on the project's positive influences in the watershed: documented improvements in habitat quality and quantity, riparian enhancement, and the increased use of enhanced habitat by all salmonids.

Incorporating new information regarding uncertainties:

If changes in out-of-basin survival occur, parts of the project such as continued outplanting of adult steelhead in Big Boulder Creek may no longer be necessary, and more time may have to be devoted to sampling fish populations. If out-of-basin survival does not change, increased time and money will need to be spent on reintroduction efforts.

Increasing public awareness of F&W activities:

At all enhancement sites, information about the projects and the sponsors is readily available to the public on billboard signs at highly visible access points. Involvement with Model Watershed activities and continued improvements in land and water stewardship practices requires continuing public involvement and education through meetings, field tours, and other forums.

RELATIONSHIPS

RELATED BPA PROJECT

5514000 Salmon River Production Program

RELATIONSHIP

Work with the Production program to incorporate a low-tech bioenhancement facility for chinook salmon in the Yankee Fork.

9401700 Idaho Model Watershed Habitat Projects

Provide data and assist planning, implementation, and monitoring of Model Watershed projects. Maintain active role on the Model Watershed Technical and Advisory Committees.

8909803 Salmon Supp. Studies in Id Rivers - Sho-bann Tribes

Share field personnel and equipment to conduct snorkel sampling and redd counts in the Upper Salmon River basin.

OPPORTUNITIES FOR COOPERATION:

Work cooperatively with the Idaho Department of Fish and Game during snorkeling surveys of juvenile abundance and outplanting adult steelhead in Big Boulder Creek. Coordinate with the U.S. Forest Service, Bureau of Land Management, Idaho Department of Fish and Game, other Tribal projects, and private landowners when collecting habitat and fisheries data. Several agencies have been included on task force teams for the planning and implementation of improvement projects sponsored by the Shoshone-Bannock Tribes, and Memorandums of Agreement with the U.S. Forest Service are in place for continued cooperation with the Operations and Maintenance of the project enhancement sites. The project also works cooperatively with the National Resources Conservation Service, the U.S. Fish and Wildlife Service, and the National Marine Fisheries Service.

COSTS AND FTE

1997 Planned: \$268,000

FUTURE FUNDING NEEDS:

<u>FY</u>	<u>\$ NEED</u>	<u>% PLAN</u>	<u>% IMPLEMENT</u>	<u>% O AND M</u>
1998	\$281,000	15%	40%	45%
1999	\$295,000	15%	45%	40%
2000	\$310,000	15%	45%	40%
2001	\$325,000	15%	45%	40%
2002	\$340,000	15%	45%	40%

PAST OBLIGATIONS (incl. 1997 if done):

<u>FY</u>	<u>OBLIGATED</u>
1994	\$360,488
1995	\$234,812
1996	\$253,000

TOTAL: \$848,300

Note: Data are past obligations, or amounts committed by year, not amounts billed. Does not include data for related projects.

FY OTHER FUNDING SOURCE

	<u>AMOUNT</u>	<u>IN-KIND VALUE</u>
1998 USFS	\$10,000	
1999 USFS	\$10,000	
2000 USFS	\$10,000	

OTHER NON-FINANCIAL SUPPORTERS:

U. S. Forest Service, U.S. Bureau of Land Management, Idaho Department of Fish and Game.

LONGER TERM COSTS: \$340,000

Implementation and Operation and Maintenance

1997 OVERHEAD PERCENT: 26%

HOW DOES PERCENTAGE APPLY TO DIRECT COSTS:

Personnel only

CONTRACTOR FTE: 4

SUBCONTRACTOR FTE: Up to 20

